BASIS FOR THE AMENDMENT

Claims 30-31, 44, 47, 52 and 54-57 are active in the present application. Claims 1-29, 32-43, 45-46, 48-51 and 53 are canceled claims. Independent Claim 30 has been amended to state that the lap of threads is a single layer of threads. Support for the amendment is found in the paragraph bridging pages 3 and 4, and in Claim 30. Claim 30 has been further amended to state that the lap of threads is placed with a weft insertion carriage. Support for the amendment is found on page 15, line 26. Claims 55-57 are new claims. Support for new Claim 55 is found on page 4, lines 35-36. Support for new Claims 56 and 57 is found in the sentence bridging pages 13 and 14 and on page 15, line 7. No new matter is added.

REQUEST FOR RECONSIDERATION

Applicants thank Examiner Aftergut for the helpful and courteous discussion of September 21, 2005. During the discussion it was noted that some of the prior art of record in the present application describes the preparation of thread-containing structures with devices other than weft insertion carriages. It was discussed that a process of using a weft insertion carriage and the product thereby produced is different from the manufacturing processes and products described in some of the prior art references.

The Examiner brought to the attention of Applicants' U.S. representative a patent to Middelman (U.S. 5,269,863). The Examiner specifically drew attention to Figure 4 of Middelman which appears to disclose a three layer structure of threads wherein a middle layer is transverse to two outer layers. It was determined however that the layers of Figure 4 may represent more than a single layer of thread. For example, Figure 4 is described as follows in Middelman:

> For elucidation FIG. 4 illustrates the relative positions of three layers of threads formed by a bottom single 0° layer (1° x 0°), **a central double 90° layer (2° x 90°)**, and a top single 0° layer (1° x 0°). (See column 10, lines 18-21).

Therefore, the middle layer of Figure 4 of Middelman, identified as the 90° layer, is one that contains a "double layer" of threads. This theme of multiple thread-layered layers is repeated throughout Middelman. It is evident in cross-sectional views such as Figure 6 that some of the layers of Middelman actually represent two separate layers of threads.

In contrast to the structures of Middelman, present independent Claim 30 now requires that the lap of threads is a single thread layer. Middelman does not suggest or disclose a method wherein a three layered composite structure is formed.

The presently claimed method for manufacturing a composite sheet includes forming a composite sheet that contains only three layers: a first layer of a first bundle of parallel

threads, a second layer of a lap of threads, and a third layer of a second bundle of parallel threads. The threads and bundles of threads are not connected to one another between layers.

Independent Claim 30 is amended herein to require that the lap of threads is a single layer of continuous threads. Claim 30 has been further amended to require that the lap of threads is placed on the moving bundle of threads with a weft insertion carriage.

One advantage of the presently claimed method is the ability to form a composite sheet from thread stock. By using thread stock (e.g., a fibrous material that can be drawn as a continuous thread from a spool) the disadvantages and drawbacks of using cut strands and/or fibrous materials having short length is eliminated. Thread stock has advantages over cut fibers (e.g., strands) because thread stock is more compact, more easily handled, produces less dusting and fines, and is easier to lay in a regular pattern as a moving web. In contrast, the use of cut strands or fibrous materials requires advanced processing equipment which may significantly increase the capital cost for carrying out a process for preparing a composite sheet.

The Office cited to Repass (U.S. 2,434,887) as evidence that the invention of the previously presented claims is obvious. One of the explicit limitations of present Claim 30 is that the threads of the first, second and third layers "are separate and unconnected from threads in any other layer". Applicants submit that this limitation on its own distinguishes the claimed invention as novel and not obvious in view of Repass, regardless of any secondary references combined with Repass.

Further, Applicants draw the Office's attention to amended Claim 30 which requires that the lap of threads is a single layer of continuous threads. In contrast to the inventions claimed in present Claims 30 and 54, Repass describes a material which (i) contains interconnected fiber layers and (ii) is made from materials that are not continuous threads but instead are webs of loose fibers. For example, Repass discloses:

> An important feature of the invention therefor is a method of laminating a plurality of layers of fiber immediately after the webs have been subjected to a drawing operation so **that fibers of the respective webs, in seeking to return from a somewhat straightened out position to a normally curled state, may become interlocked with one another**, thus tending to induce integration of the adjacent layers and provide greater strength. (column 2, lines 14-23).
>
> By bringing the fibers of adjacent layers into contact with one another at the precise point noted, **they are given an opportunity to interlock with one another** and yet are prevented from loosing all of their straightened formation. (column 3, lines 35-38).
>
> From the foregoing description, it will be seen that we have provided a method of handling thin webs of drawn fibers to produce a composite web in which increased strength is derived from bringing together a plurality of layers immediately upon being delivered from drying roll units. As a result of this, **improved interlocking of adjacent fibers is carried out**. (column 6, lines 25-32).
>
> The method of the invention generally includes the laminating or building up of a plurality of layers of freshly drawn fiber. **A principle example of raw stock is cotton slivers**. (column 3, lines 17-20).
>
> A bottom layer is first drawn and disposed upon a moving conveyor belt which carries the web along to a point where it receives **an intermediate layer made up of a plurality of cross links** arranged transversely over the bottom layer in overlapping relation. (column 3, lines 55-60).
>
> In accordance with the invention, **we subject the web to a slight compacting step carried out by passing the web through curved guides and (see fig. 2) which pack the loose fibers** and tend to increase slightly the thickness of the web along the edge portions. (column 4, lines 33-38).

Therefore, the method of Repass is one that creates a composite web (e.g., mat) that is explicitly excluded from the presently claimed invention which states that "the first layer, second layer, and third layer are separate and unconnected from threads in any other layer". Because Repass discloses a process and composite web that are explicitly excluded from the presently claimed invention, Applicants submit that Repass is not pertinent prior art to the invention of the present claims. Applicants further submit that Repass discloses that

interconnecting different layers or fibers is a necessity and benefit of the prior art process. In contrast, the presently claimed invention has layers that are not interconnected.

Applicants submit that those of ordinary skill in the art would not turn to the disclosure of Repass to arrive at the invention of the present claims because Repass discloses interconnecting layers as a benefit deriving from the prior art process whereas the claimed process excludes such interconnecting.

Applicants further submit that the webs of loose fibers of Repass do not suggest the continuous lap of fibers of present Claim 30. In fact, the webs of Repass create some of the problems that the presently claimed invention solves, such as dusting, protrusion of fiber material from the surface of a composite sheet, and the need for compacting and/or special handling equipment for webs and loose fibers.

The arguments presented above with regards to Repass' disclosure of interconnecting layers and the use of fiber webs, apply equally to Vane. As was stated in the Amendment filed in the present case on May 3, 2005, Vane requires that the prior art layers are stitched together to hold the layers in fixed relation to one another (column 5, liens 53-56). Such stitching and/or interconnecting is explicitly excluded from the present process.

Applicants submit that those of ordinary skill in the art would have no expectation of successfully arriving at the presently claimed process from the disclosure of Vane because Vane discloses a process that requires a feature that is explicitly excluded from the presently claimed invention; namely, stitching and/or interconnecting.

The Office cited Vane as support that those of ordinary skill in the art may apply the methods and/or disclosure of Whisler to form a composite structure having less than four layers (see the second full sentence on page 4 of the Office Action of June 2, 2005). Applicants submit that this makes no sense. Vane requires the use of interconnecting layers, a feature which is explicitly excluded from the claimed process.

How can those of ordinary skill in the art rely on Vane for a teaching of a three-layer structure that excludes inter-connections between layers when the Vane structure must have interconnecting layers?

As was mentioned above, Claim 30 has been amended to state that the lap of fibers is placed with a weft insertion carriage. Applicants submit that Whisler does not disclose the use of a weft insertion carriage. Instead, Whisler uses a mechanism which permits the prior art angled bundle of threads to be wrapped around a sheet or layer of threads. Applicants submit the presently claimed invention is not suggested by Whisler at least because Whisler requires the use of an apparatus to wrap a fiber of thread around a sheet or layer of threads, something which is not possible with the weft insertion carriage of the presently claimed invention.

With respect to Whisler, the Office notes that the prior art co-mingled material is in the form of wrapped strands that are wrapped at angles of up to 87°. The Office characterizes about 87° as "substantially transverse". In contrast, the presently claimed invention explicitly states that the lap of threads is oriented transverse to the direction of a moving bundle of threads. The axis of "about 87°" disclosed in Whisler, and which the Office asserts is "substantially transverse", is different from and not the same as the "transverse" recited in the present claims. The Office provided no support for its assertion that the "about 87°" disclosed in Whisler is equivalent to a transverse orientation of fibers.

Whisler avoids 90° (e.g., a transverse arrangement) by disclosing 87° as an upper limit. The Office extends the disclosure of Whisler to include 90° but provides no support why one of ordinary skill in the art would believe that transverse (e.g., 90°) is the same as non-transverse (e.g., about 87°) and thereby be motivated to rely on the teachings of the prior art to arrive at the presently claimed invention.

Applicants submit that the Office's assertion that the 87° of Whisler is substantially transverse, or equivalent to transverse and thereby, renders the transverse arrangement of fibers recited in the present claims obvious, is not supportable.

Regardless of the fact that Whisler does not disclose the use of a weft insertion device, Applicants note that the layer of threads which is wrapped at angles of up to 87° is inherently a two thread layer. The angled thread of Whisler is wrapped around the form shown as ref. no. 142 in Figure 4 of Whisler. It is evident from Figure 4 that the angled bundle of fibers (i.e., represented by ref. no. 20) are both on top of the form (ref. no. 142) and behind the form. This is evident by the depiction of the angled prior art bundle of fibers in both solid and dashed lines. Therefore, not only does Whisler not meet the requirement that the lap of threads is placed by a weft carriage device, Whisler is further different from the presently claimed invention because a layer of fibers which may correspond to the lap of fibers of the presently claimed invention contains two layers of threads whereas the lap of threads in the claimed invention contains only a single layer of threads.

Moreover, it appears that the Office may be rejecting the presently claimed invention on the basis that it appears to be a simple and straightforward process. However, such reasoning is not a proper legal basis for establishing a *prima facie* case of obviousness. The presently claimed process allows those of ordinary skill in the art to prepare a composite sheet by using a process that includes threads (e.g., the continuous threads of dependent Claim 54) to form a composite sheet. None of the prior art cited by the Office uses a simple process to prepare a composite sheet containing only the three unconnected layers recited in the present claims. Instead, the prior art discloses processes that require intricate handling of threads and/or fiber webs using equipment that may significantly increase the capital costs associated with manufacturing the prior art sheets.

Applicants submit that the prior art does not disclose or suggest the presently claimed invention. Instead the prior art proffers a complicated capital- and machinery-intensive process that presents substantial disadvantages to those wishing to prepare a solid composite sheet having three unconnected layers.

Applicants therefore submit that the presently claimed invention remains patentable over the prior art of record and respectfully request withdrawal of the rejections.

Respectfully submitted,

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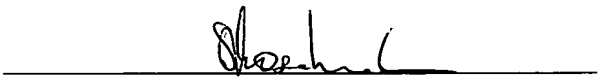

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